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09/524,160	03/13/2000	Kiyoshi Taguchi	10059-349	7198

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EXAMINER
RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/524,160	Applicant(s) TAGUCHI ET AL.	
	Examiner Basia Ridley	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 March 2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The specification is replete with informalities too numerous to point out specifically. Examples of such instances are as follows:

- inconsistent numbering of elements: e.g.: "CO purification catalyst body 20" (P27/L15), "CO purification catalyst body 9" (P35/L6 and P36/L3-4) and "CO purification catalyst body 29" throughout the specification;
- inconsistent numbering of elements: e.g.: "13A town gas" (P27/L1) and "first route 13A" throughout the specification;
- inconsistent numbering of elements: e.g.: "reforming catalyst body 44" (P43/L22) and "reforming catalyst body 46" throughout the specification;
- inconsistent numbering of elements: e.g.: "heating burner 45" (P43/L22) and "heating burner 44" throughout the specification;
- inconsistent numbering of elements: e.g.: "reforming catalyst body 6" (P58/L6-7) and "reforming catalyst body 46" through out the specification.

The applicant is reminded that the above instances are merely exemplary and that the entire specification should be carefully reviewed and revised to avoid informalities and inconsistencies.

Drawings

2. The following are some examples of the drawing objections. The actual objections are too numerous to point out specifically. Examples of such instances are as follows:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include reference sign(s) not mentioned in the description: for example: 33, 36 and 40 in Fig. 4; 43, 45 in Fig. 5; 63, 64, 65, 68, 70 and 72 in Fig. 6; etc.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign(s) mentioned in the description: for example: "CO purification catalyst body 9" (P35/L6 and P36/L3-4) is not in Fig. 3; "route c" (P35/L5) is not in Fig. 3; "heat exchange fin 23" (P43/L20-21) is not in Fig. 4; "reforming catalyst body 6" (P58/L6-7) is not in Fig. 5; "CO shifting catalyst body 27" (P56/L21-22 & P57/L9) is not in Fig. 6.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The applicant is reminded that the above instances are merely exemplary and that the all drawings should be carefully reviewed and revised to avoid objections.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim(s) 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over McShea, III et al. (USP 4,863,707) in view of Muenger (USP 3,666,682) and further in view of Reynolds (USP 3,919,114).

Regarding claim 1, 3 and 5, McShea, III et al. discloses a hydrogen generating apparatus comprising:

- a fuel feeding part (12);
- a water feeding part (40) for fuel reforming;

- an oxidant gas feeding part (18);
- a reforming catalyst body (42);
- a heating part for said reforming catalyst body
- a heating part (42a) for said reforming catalyst;
- a CO shifting catalyst body (50, 58);
- CO purification catalyst body (70);
- the reforming catalyst body (42), CO shifting catalyst body (50, 58), and CO purification catalyst body (70) being placed sequentially in the order from said fuel feeding part (12) toward the downstream side (Fig. 2); wherein
- fuel and water are fed to heated reforming part (Fig. 2);
- an oxidant gas (72) from said oxidant gas feeding part (18) is mixed with shifted gas (60) obtained in said shifting part (50, 58) and introduced into purification part (70); wherein
- oxidant gas from said oxidant gas feeding part (18) is mixed with fuel and water from said fuel feeding part (12) and said water feeding part (40).

The reference does not explicitly disclose oxidant gas feeding part being mixed with reformed gas introduced to shifting part and used to control temperature of said shifting part.

While McShea, III et al. discloses two water shift stages, it does not disclose any specific design of said stages.

Muenger teaches an advantageous design of water shift catalyst stage which is more efficiently and economical than conventional technology using more than one catalyst beds with heat exchangers in-between (C1/L20-C2/L2). In said apparatus the temperature of various zones is individually controlled, with the initial zone being quickly brought up to the operating temperature with the temperature being controlled by, among others composition of feedstream (C2/L36-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the two shift reactors of McShea, III et al. with the shift reactor taught by Muenger for the purpose of improving process economy and efficiency.

While Muenger does not explicitly discloses a temperature measuring part, as the reference discloses that the temperature has to be controlled (C2/L36-46) a presence of said temperature measuring part is inherent.

While Muenger teaches that composition of feedstream can control the temperature of the initial zone of the shift reactor (C2/L36-46), the reference does not explicitly disclose introducing oxygen to said feedstream.

It was known in the art at the time of the invention that oxygen can be added to the feedstream for a shift reactor to control the temperature of said shift reactor (as evidenced by Reynolds, C5/L32-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add oxygen to the feedstream for the shift reactor of McShea, III et al., in view of combined teachings of Muenger and Reynolds, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result.

Regarding claims 2, McShea, III et al. in view of Muenger and further in view of Reynolds disclose all of the claim limitations as set forth above. Additionally, Muenger discloses the apparatus wherein:

- said shifting catalyst body contains as one component at least a platinum group-type catalyst (C3/L60-75).

Regarding claims 4 and 6, McShea, III et al. in view of Muenger and further in view of Reynolds disclose all of the claim limitations as set forth above. Additionally, while McShea, III et al. does not explicitly disclose said reforming catalyst part and said CO purification catalyst part further comprising temperature measuring parts for control of the temperature in said catalyst parts, the reference discloses that it is desired to control temperatures of various process parts (C3/L65-C4/L5 and C17/L60-C18/L60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include additional temperature sensors in, reforming and CO purifying catalyst beds for the purpose of controlling temperature of said beds, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding limitations recited in claims 8-9 which are directed to a manner of operating disclosed gasifier, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

5. Claim(s) 7 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over McShea, III et al. (USP 4,863,707) in view of Muenger (USP 3,666,682) and further in view of Reynolds (USP 3,919,114), as applied to claim 1 above, and further in view of Clyde (USP 3,900,646).

Regarding claim 7, McShea, III et al. in view of Muenger and further in view of Reynolds disclose all of the claim limitations as set forth above. Additionally, while McShea, III et al. discloses that said reforming catalyst body comprising a carrier having a honeycomb structure, foamed body structure of corrugated structure carrying a catalyst component (C12/L65-68), the reference does not explicitly disclose a structure of said shift catalyst body and said CO purification catalyst body.

Clyde teaches that catalyst body comprising a carrier having a honeycomb structure, foamed body structure of corrugated structure carrying a catalyst component are advantageous over other catalysts (C1/L54-C2/L7), because they provide more efficient heat transfer, improve catalyst life by lowering sintering poisoning and flaking and lower pressure drop over the catalyst bed. As such said catalysts are especially well suited for endothermic and exothermic reactions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use catalyst body comprising a carrier having a honeycomb structure, foamed body structure of corrugated structure carrying a catalyst component as the shift catalyst body and CO purification catalyst body of McShea, III et al., in view of teaching of Clyde, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result.

6. Claim(s) 10-12 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over McShea, III et al. (USP 4,863,707) in view of Muenger (USP 3,666,682) and further in view of Reynolds (USP 3,919,114), as applied to claim 1 above, and further in view of Szydlowski et al. (WO 91/10496).

Regarding claim 10-12, McShea, III et al. in view of Muenger and further in view of Reynolds disclose all of the claim limitations as set forth above, but the references do not disclose a scatter preventing means provided between said reforming catalyst body and said CO shifting body and between said CO shifting body and said CO purification body.

Szydlowski et al. teaches that providing filters as scatter preventing means following catalyst beds advantageously prevents catalyst losses from the catalyst beds (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add filter pads as scatter preventing means between said reforming catalyst body and

said CO shifting body and between said CO shifting body and said CO purification body of McShea, III et al., as taught by Szydlowski et al., for the purpose of preventing catalyst losses from said catalyst bodies.

As Szydlowski et al. teaches that pressure losses over said scatter preventing means are an issue (P2/L11-14), it would have been obvious to one having ordinary skill in the art at the time the invention was made to place temperature near said scatter preventing means and pressure detecting apparatus upstream and downstream of said scatter preventing means to ensure that there are not excessive pressure losses.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

8. In view of the foregoing, none of the claims are allowed.

9. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1764.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (703) 305-5418. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (703) 308-6824.

The fax phone number for Group 1700 is (703) 872-9311 (for Official papers after Final), (703) 872-9310 (for other Official papers) and (703) 305-6078 (for Unofficial papers). When filing a fax in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley
Examiner
Art Unit 1764

JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

BR
June 30, 2003